

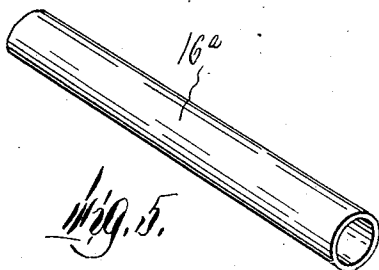
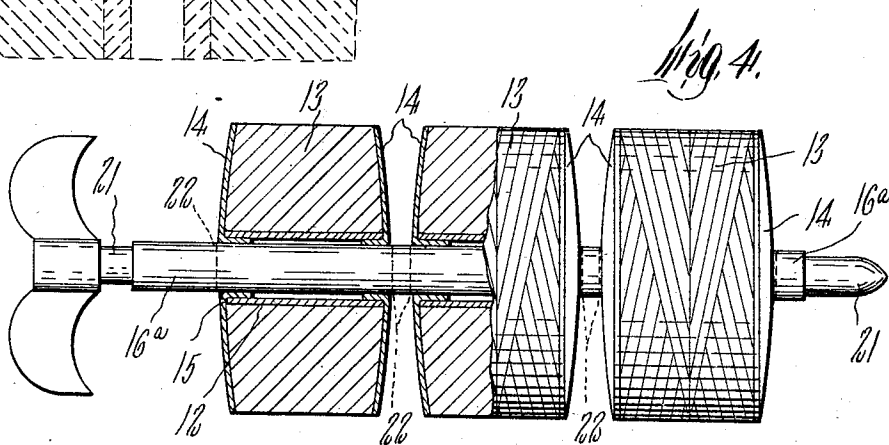
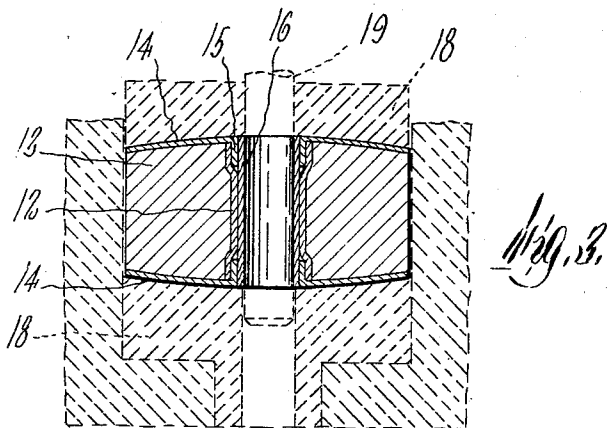
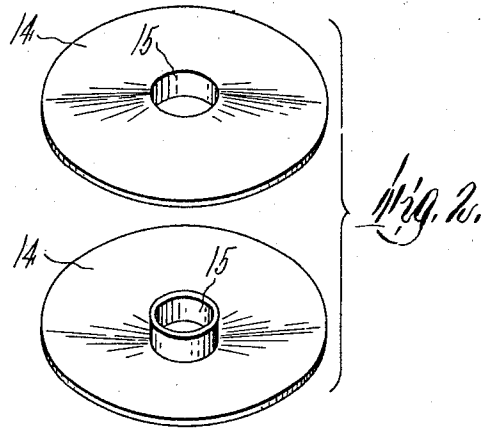
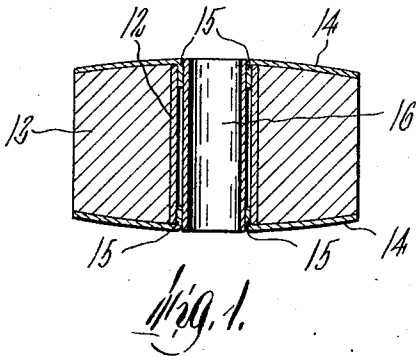
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BOBBIN AND METHOD OF MAKING THE SAME

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BOBBIN AND METHOD OF MAKING THE SAME

Application filed October 12, 1931. Serial No. 563,425.

This invention relates to a sewing machine shuttle bobbin which includes a tubular core, a thread mass, usually cross wound thereon, and a pair of discoidal heads covering and conforming to the ends of the thread mass.

The object of the invention is to provide an improved construction whereby the heads are firmly secured in their operative positions, and the central or hub portion of the bobbin, which rotates on the usual center post of the shuttle, is reinforced and the shuttle is rendered desirably substantial.

Of the accompanying drawing forming a part of this specification,—

Figure 1 is a sectional view of a partially completed bobbin constructed in accordance with the invention.

Figure 2 shows in perspective the bobbin heads shown by Figure 1.

Figure 3 is a sectional view showing the completed bobbin and illustrating means which may be employed in completing it.

Figure 4 shows a plurality of incomplete bobbins assembled on a supporting rod.

Figure 5 shows in perspective an elongated tube from which the reinforcing inner tubes of the bobbin hereinafter described are severed.

The same reference characters indicate the same parts in all of the figures.

In the drawing 12 designates the tubular core, and 13 the thread mass wound thereon.

14—14, designate the discoidal heads which cover and are conformed to the ends of the thread mass, and may be made of paper or other suitable material such as metal or celluloid. Said heads have central openings surrounded by inwardly projecting tubular flanges 15 which are inserted in the end portions of the core and leave an intermediate portion of the internal surface of the core exposed. The core, the thread mass and the heads constitute an incomplete bobbin.

16 designates a reinforcing inner tube which completes the bobbin and is preferably made of relatively thin tough paper such as kraft paper, and is of smaller diameter than the internal diameter of the core and of such diameter that the ends of the tube are within the head flanges 15.

Before the tube 16 is inserted in the incomplete bobbin, its external surface is coated with glue or other suitable adhesive and after 16 is inserted it is adhesively united to the flanges 15 and the intermediate portion of the internal surface of the tube, and reinforces the hub portion of the bobbin, the tube constituting the inner member of said hub portion.

When the bobbin is in the condition shown by Figure 1, the tube 16 is slightly spaced from the core 12. The bobbin in this condition is subjected to compressing pressure preferably by a well known cop press including opposed pressing members 18 contacting with the heads 14, and a spindle member 19 projecting into and internally supporting the inner tube. The cop press acts to reduce the length of the bobbin and compress and change the form of the thread mass so that a portion of it bulges inwardly and presses the portion of the core, between the flanges 15, inwardly against the inner tube 16, which is now rigidly backed by the spindle member 19, as shown by Figure 3. The adhesive coating on the tube 16 therefore contacts with the core so that when the adhesive solidifies, or sets, the inner tube is adhesively united to the flanges 15 and core 12, the pressure being maintained long enough to permit the setting of the adhesive.

The inner tube not only reinforces the hub portion of the bobbin, but provides said portion with a smooth wall or bearing surface rotatable on a center post.

Figure 4 shows an elongated tubular blank 16^a adapted to be cut up into a plurality of inner tubes 16. The tube 16^a is placed upon a rod 21, and an adhesive coating is applied to its outer surface. Partially completed bobbins, each including a core, a threaded mass, and a pair of heads, but not an inner tube, are then strung on the tube 16^a. The tube 16^a is then severed at points indicated by the dotted lines 22 so that each bobbin includes an inner tube 16. The flanges 15 now sufficiently adhere to the tube to permit the removal of the incomplete bobbin and its completion by the above described pressing operation.

It will be seen that the disk flanges 15, the

inner tube 16, and the adhesive uniting said flanges and the core 12 to the inner tube, constitute means securely attaching the disks 14 to the ends of the thread mass and to the end portions of the core, in such manner that the disks are not liable to be detached.

Such detachment causes much trouble to sewing machine operators when the disks are engaged only with the ends of the core as by upsetting said ends to form flanges overlapping the margins of central holes formed in the disks. When bobbins characterized as last stated are used, several disks detached from the inner ends of bobbins sometimes accumulate in the inner end of the bobbin case of the shuttle and have to be removed before a full bobbin can be introduced.

A disk detached from the outer end of the babbin leaves the end portion of the core projecting from the thread mass and liable to catch thread unwound from the mass and cause breakage of the thread. A full or nearly full bobbin thus damaged has to be discarded.

I claim:

1. A filled reinforced bobbin, comprising a tubular core, a thread mass wound thereon, discoidal heads covering and conformed to the ends of the thread mass and having central openings surrounded by inwardly projecting tubular flanges inserted in the end portions of the core, and a reinforcing inner tube inserted in the flanges and core and adhesively united to the flanges and to the portion of the core between the flanges, said inner tube constituting the inner member of the hub portion of the bobbin.

2. The method of forming a reinforced filled bobbin which consists in applying an adhesive coating to the external surface of a reinforcing inner tube, winding a thread mass on a tubular core of larger diameter than the inner tube, applying to the ends of the thread mass and core a pair of heads having central inwardly projecting tubular flanges entering the ends of the core, thereby forming an incomplete bobbin, internally supporting the inner tube, placing the incomplete bobbin thereon with the flanges on the end portions of the inner tube, exerting pressure on the incomplete bobbin to reduce its length and change the form of the thread mass to press the core and flanges against the coated surface of the internally supported inner tube, and maintaining the pressure until the coating sets.

3. The improved step in the method of making reinforced filled bobbins, which consists in placing an elongated tube of indeterminate length on a support, coating said tube with an adhesive, stringing on the coated tube a plurality of incomplete bobbins, each including a tubular core of larger diameter than the tube, a thread mass wound on the core, and a pair of heads having central in-

wardly projecting tubular flanges entering the ends of the core, severing the elongated tube between the incomplete bobbins and thereby converting the tube into a plurality of reinforcing inner tubes within the incomplete bobbins, removing the said bobbins and inner tubes from the support, and completing the bobbins by pressure.

In testimony whereof I have affixed my signature.

ROBERT N. CORTHELL.